

A SUMMARY OF THE FOOD HABITS OF NORTH AMERICAN HEMIPTERA.

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The Hemiptera, which are without exception sucking insects, exhibit some diversity in food habits, and it is the purpose of this paper to call attention to these in a very brief and general way. Compared with other orders of insects, the Hemiptera have never been favorite subjects for study, and detailed information about many species is lacking. In the table which follows the family food habits only have been indicated, and as a rule these have been based mainly on the activities of a comparatively few members. The figures referring to the number of species in each family were obtained from Van Duzee's "Catalogue of the Hemiptera of America North of Mexico." This catalogue does not include the *Aphididae*, *Coccidae* and *Aleurodidae*, and such families are not considered in the present paper.

HEMIPTERA.

Family.	No. species.	Habits.
Scutelleridae	26	Feed on vegetation, probably many are predaceous.
Cydnidae	45	In sand and mud banks; on vegetation.
Pentatomidae	164	Varied; predaceous; mostly plant feeders.
Coreidae	124	Plant feeders.
Aradidae	59	On fungi, under bark, fungivorous?
Neididae	8	Plant feeders.
Lygaeidae	187	Plant feeders; some may be predaceous.
Pyrrhocoridae	22	Plant feeders; some predaceous forms.
Tingididae	47	Plant feeders.
Enicocephalidae	2	Predaceous.
Phymatidae	12	Predaceous.
Reduviidae	113	Predaceous.

Hebridae	4	Found in wet places; predatory.
Mesoveliidae	1	Predatory.
Nabidae	21	Predaceous.
118 — Cimicidae	4	On blood of birds, bats, man.
Anthocoridae	34	Mostly predatory.
Teratophylidae	1	?
Miridae	398	Plant feeders.
Isometopidae	4	Found in shaded situations.
Dipsocoridae	3	?
Schizopteridae	1	Found by sifting leaves, rubbish, etc.
Hydrometridae	2	Aquatic; predatory.
Gerridae	18	Aquatic; predatory.
Veliidae	15	Like those of <i>Gerridae</i> .
Saldidae	32	On shores of rivers, etc.; predaceous.
Notonectidae	18	Aquatic; predatory.
Naucoridae	13	Aquatic; predatory.
Nepidae	8	Aquatic; predatory.
Belostomidae	20	Aquatic; predatory.
Gelastocoridae	5	Predatory.
Ochteridae	3	Predatory.
Corixidae	55	Aquatic; vegetable feeders (predatory?).
Cicadidae	74	Plant feeders.
Cercopidae	25	Plant feeders.
Membracidae	185	Plant feeders.
Cicadellidae	698	Plant feeders.
Fulgoridae	357	Plant feeders.
Chermidae	137	Plant feeders.

The families and species in the above table can be roughly grouped, according to their food habits, about as follows:

	No. families.	No. species.	Per cent. of total.
Phytophagous	17	2,611	89
Harpactophagous ...	17	321	11
Animal parasites.....	1	4	..
Habits obscure.....	4	9	..
	<hr/> 39	<hr/> 2,945	<hr/> 100

On account of the large percentage which is phytophagous it is easily understood why the economic status of the order is impor-

tant. With the inclusion of the *Aphididae*, *Coccidae* and *Aleurodidae*, this figure would be considerably higher. While most of these forms confine their activities to relatively unimportant plants, many are potential pests and some have attained prominence as serious enemies of agriculture.

Of saprophagous forms, the order is practically barren. The predatory species are fairly numerous, the percentage of these being about 11. These species appear to be important only in a limited way, and while their activities help to preserve a natural balance between certain groups, as a whole they lack elasticity, and do not, on account of their limited powers of reproduction, respond to any sudden increases in phytophagous forms. Beyond a certain point it is useless to expect more from them; on the other hand, the aquatic forms are a potential danger to fish hatcheries.

The four species listed as animal parasites consist of the well-known bed-bug and its relatives which frequent birds and bats. As a whole the food habits of the Hemiptera do not show as much variation as those of the Coleoptera. In this latter order about 26 per cent. of the species is phytophagous, 44 per cent. saprophagous and 27 per cent. harpactophagous. In other words, over 70 per cent. of the species of Coleoptera appear to be engaged in useful activities, while most of the Hemiptera are feeders upon the higher plants.

I am indebted to Mr. J. R. de la Torre-Bueno for information concerning the habits of the members of certain of the obscure families.

Our readers are invited to send in brief biological notes to fill small spaces like this.